

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Application No.: 10/000,323

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method for producing a light-emitting device comprising the steps of disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure, and disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from external air, wherein said one or more organic layers comprises a light-emitting layer containing a phosphorescent compound, and wherein said light-emitting layer, and said back side electrode are formed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less and said sealing parts are disposed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less.

2. (Original): The method for producing a light-emitting device according to claim 1, wherein said one or more organic layers is isolated from external air after disposing said light-emitting layer until said sealing parts are disposed.

3. (Original): The method for producing a light-emitting device according to claim 1, wherein both of said moisture concentration and said oxygen concentration are 50 ppm or less.

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4. (Original): The method for producing a light-emitting device according to claim 3, wherein both of said moisture concentration and said oxygen concentration are 30 ppm or less.

5. (Original): The method for producing a light-emitting device according to claim 1, wherein at least one of said organic layers is formed by a wet film-forming method.

6. (previously presented): The method for producing a light-emitting device according to claim 1, wherein said one or more organic layers comprises a hole-injecting layer in contact with said light-emitting layer and said hole-injecting layer is over said transparent electrode.

7. (original): The method for producing a light-emitting device according to claim 6, wherein both of said hole-injecting layer and said light-emitting layer are formed by a wet film-forming method.

8. (Original): The method for producing a light-emitting device according to claim 6, wherein said one or more organic layers further comprises an electron-transporting layer between said light-emitting layer and said back side electrode.

9. (Original): The method for producing a light-emitting device according to claim 1, wherein a weight ratio of said phosphorescent compound in said light-emitting layer is 0.1 to 70 weight % based on the total weight of said light-emitting layer.

10. (Original): The method for producing a light-emitting device according to claim 1, wherein said phosphorescent compound is an *ortho*-metallation complex.

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11. (Original): The method for producing a light-emitting device according to claim 1, wherein an ultraviolet-hardening resin is used in combination with said sealing parts to isolate said one or more organic layers from external air.

Claims 12-20 (canceled).

21. (currently amended): A method for producing a light-emitting device comprising the steps of:

disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure;

disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from external air,

wherein said one or more organic layers comprise a light-emitting layer containing a phosphorescent compound; and

disposing-forming said light-emitting layer, and said back side electrode in an inert gas atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less, and disposing said sealing parts in an inert gas atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less; and

said one or more organic layers is/are isolated from external air after disposing-forming said light-emitting layer until said sealing parts are disposed.

22. (currently amended): A method for producing a light-emitting device comprising the steps of:

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disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure;

disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from external air,

wherein said one or more organic layers comprises a light-emitting layer containing a phosphorescent compound;

disposing-forming said light-emitting layer; and said back side electrode in an inert gas atmosphere where both moisture concentration and oxygen concentration are 30 ppm or less; and disposing said sealing parts in an inert gas atmosphere where both moisture concentration and oxygen concentration are 30 ppm or less; and

said one or more organic layers is/are isolated from external air after disposing-forming said light-emitting layer until said sealing parts are disposed.

23. (currently amended): A method for producing a light-emitting device comprising the steps of:

disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure;

disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from external air,

wherein said one or more organic layers comprises a light-emitting layer containing a phosphorescent compound; and

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disposing forming said light-emitting layer, and said back side electrode in an inert gas atmosphere where both moisture concentration and oxygen concentration are 100 ppm or less; and disposing said sealing parts in an inert gas atmosphere where both moisture concentration and oxygen concentration are 30 ppm or less; and

said one or more organic layers is/are isolated from external air after disposing-forming said light-emitting layer until said sealing parts are disposed, and wherein at least one of said organic layers is formed by a wet film-forming method.

24. (currently amended): A method for producing a light-emitting device consisting essentially of the steps of:

disposing a transparent electrode, one or more organic layers and a back side electrode on a substrate to provide a light-emitting structure; and

disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from moisture and oxygen in external air;

wherein said one or more organic layers comprises a light-emitting layer containing a phosphorescent compound which utilizes triplet excitons for light emission, and

wherein said light-emitting layer, and said back side electrode are formed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less and said sealing parts are disposed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less.

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25. (previously presented): The method for producing a light-emitting device according to claim 24, wherein both of said moisture concentration and said oxygen concentration are 50 ppm or less.

26. (previously presented): The method for producing a light-emitting device according to claim 25, wherein both of said moisture concentration and said oxygen concentration are 30 ppm or less.

27. (previously presented): The method for producing a light-emitting device according to claim 24, wherein at least one of said organic layers is formed by a wet film-forming method.

28. (previously presented): The method for producing a light-emitting device according to claim 24, wherein said one or more organic layers comprises a hole-injecting layer in contact with said light-emitting layer and said hole-injecting layer is over said transparent electrode.

29. (previously presented): The method for producing a light-emitting device according to claim 28, wherein both of said hole-injecting layer and said light-emitting layer are formed by a wet film-forming method.

30. (previously presented): The method for producing a light-emitting device according to claim 28, wherein said one or more organic layers further comprises an electron-transporting layer between said light-emitting layer and said back side electrode.

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31. (previously presented): The method for producing a light-emitting device according to claim 24, wherein a weight ratio of said phosphorescent compound in said light-emitting layer is 0.1 to 70 weight % based on the total weight of said light-emitting layer.

32. (previously presented): The method for producing a light-emitting device according to claim 24, wherein said phosphorescent compound is an *ortho*-metallation complex.

33. (previously presented): The method for producing a light-emitting device according to claim 24, wherein an ultraviolet-hardening resin is used in combination with said sealing parts to isolate said one or more organic layers from external air.

34. (previously presented): The method of claim 24, wherein said one or more organic layers comprises a hole-injecting layer in contact with said light-emitting layer and said hole-injecting layer is over said transparent electrode, and an electron-transporting layer between said light-emitting layer and said backside electrode.

35. (previously presented): The method for producing a light-emitting device according to claim 34, wherein said hole-injecting layer and said light-emitting layer are formed by a wet film-forming method.

36. (previously presented): The method for producing a light-emitting device according to claim 35, wherein said hole-injecting layer, said light-emitting layer and said electron-transporting layer are formed by a wet film-forming method.

37. (previously presented): The method for producing a light-emitting device according

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to claim 36 wherein said transparent electrode is formed by a wet film-forming method.

38. (previously presented): A method for producing a light-emitting device according to claim 36 wherein said substrate is an inorganic material.

39. (previously presented): A method according to claim 36, wherein said backside electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

hole-transporting layer, light-emitting layer, and electron-transporting layer.

40. (previously presented): A method according to claim 36, wherein said backside electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

hole-transporting layer and light-emitting layer.

41. (previously presented): A method according to claim 36, wherein said backside electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

light-emitting layer, electron-transporting layer and electron-injecting layer.

42. (previously presented): A method according to claim 36, wherein said backside

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electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

hole-emitting layer and electron-transporting layer.

43. (previously presented): A method according to claim 36, wherein said backside electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

hole-emitting layer, hole-transporting layer, light-emitting layer, electron transporting layer and electron-injecting layer.

44. (previously presented): A method according to claim 36, wherein said backside electrode is most remote from the substrate, the transparent electrode is adjacent the substrate, and there are formed from the transparent electrode to the back side electrode the following layers in the recited sequence:

hole-injecting layer, light-emitting layer and electron-transporting layer.

45. (previously presented): The method for producing a light-emitting device according to claim 36, wherein said phosphorescent compound is an ortho-metallation complex or a porphyrin complex.

46. (currently amended): A method for producing a light-emitting device consisting essentially of the steps of:

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disposing a transparent electrode, one or more organic layers and a back side electrode on said-a substrate to provide a light-emitting structure; and

disposing sealing parts on said light-emitting structure to isolate said one or more organic layers from moisture and oxygen in external air;

wherein said one or more organic layers comprises a light-emitting layer containing a phosphorescent compound which utilizes triplet excitons for light emission, and wherein said light-emitting layer, and said back side electrode are formed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less and said sealing parts are disposed in an inert gas atmosphere where both of a moisture concentration and an oxygen concentration are 100 ppm or less, the moisture and oxygen content being such that the disappearance of triplet excitons is suppressed, wherein said one or more organic layers is isolated from external air after disposing said light-emitting layer solely due to said inert gas atmosphere until said sealing parts are disposed, the method steps consisting essentially of:

forming the transparent electrode on a glass plate as the substrate in a vacuum chamber;

spin coating onto the transparent electrode an aqueous dispersion of a hole-injecting compound to form a hole-injecting layer;

forming an application liquid comprising a hole-transporting host material, a phosphorescent material and an electron-transporting material;

transferring the substrate having coated thereon the transparent electrode and the hole-injecting layer into a glove box from the vacuum chamber, where the inner atmosphere of the glove box has been replaced with an inert gas having a moisture content of less than 100 ppm

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and an oxygen content of less than 100 ppm, and introducing said application liquid into the glove box;

heating and drying the substrate carrying the transparent electrode and the hole-injecting layer in the glove box;

applying the application liquid onto the hole-injecting layer by spin-coating in the glove box to thereby form a light-emitting layer;

transferring the resultant product having the light-emitting layer into a vapor deposition apparatus connected to the glove box;

patternning the light-emitting layer to thereby provide a light-emitting structure; and

returning the light-emitting structure to the glove box and interconnecting the transparent electrode and the back side electrode therein; and

disposing the sealing parts on the light-emitting structure to isolate the one or more organic layers from the external air in the glove box.